REMARKS

Claims 1-24 were pending in the present application. Claims 2, 10, and 18 have been cancelled. Claims 1, 9, and 17 have been amended. Accordingly, claims 1, 3-9, 11-17, and 19-24 are now pending in the present application.

Claims 1-3, 7, 8, 17-19, and 23-24 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk (U.S. Patent No. 6,205,150) (hereinafter 'Ruszczyk') in view of Lu (U.S. Patent No. 6,584,102) (hereinafter 'Lu') and in further view of Huang et al. (U.S. Patent No. 6,092,137) (hereinafter 'Huang'). The Applicant respectfully traverses these rejections.

Claims 4 and 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk and Lu and in further view of Cidon et al. (U.S. Patent No. 6,269,330) (hereinafter 'Cidon'). The Applicant respectfully traverses these rejections.

Claims 5, 6, 9-16 and 21-22 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ruszczyk, Lu and Cidon in further view of Drottar et al. (U.S. Patent No. 6,343,067) (hereinafter 'Drottar'). The Applicant respectfully traverses these rejections.

The Applicant discloses at page 8, lines 1-7

> "During operation, packet I/O bus device 50A and 50B may translate PCI bus transactions into upstream packet transactions that travel in I/O streams and additionally may translate downstream packet transactions into PCI bus transactions. ... **Each I/O stream may be identified by an identifier called a Unit ID**. It is contemplated that the Unit ID may be part of a packet header or it may be some other designated number of bits in a packet or packets. As used herein, "I/O stream" refers to all packet transactions that contain **the same Unit ID and therefore originate from the same node**." (Emphasis added)

The Applicant also discloses at page 10, lines 8-15

"During operation, a packet transaction may enter upstream router 100. Upstream router 100 may identify the packet by the packet's Unit ID, which may be a five-bit identifier field. Upstream router 100 may assign this packet and all other packets with this same Unit ID to the first available buffer, such as upstream I/O buffer 125A. As each succeeding packet enters upstream router 100 it is examined and assigned to an appropriate buffer. Hence, all packets with the same Unit ID may be stored in the same buffer. Each upstream reorder logic circuit 150A-D may then analyze only those packets contained in the particular buffer that each receives packets from." (Emphasis added)

The Applicant further discloses at page 11, line 24 - page 12, line 4

"each upstream reorder logic circuit 150 of FIG. 2 examines the type of transaction that each packet contains and may reorder the packets based on a set of transaction reordering rules. If upstream reorder logic circuit 150 determines that reordering is necessary, operation proceeds to step 350 of FIG. 3A where upstream reorder logic circuit 150 of FIG. 2 reorders the transactions in upstream I/O buffer 125. Proceeding to step 360 of FIG. 3A, upstream transmitter 175 of FIG. 2 may then transmit each packet upstream. Upstream transmitter 175 may transmit the packets **from each upstream I/O buffer 125 based on a first come first served ordering scheme**. (Emphasis added)

Accordingly, the Applicant's claim 1 recites an apparatus comprising

"a plurality of upstream buffers each configured to store a plurality of upstream packets, wherein each of said plurality of upstream packets contains an associated identifier indicative of a source of each of said plurality of upstream packets; and

a router coupled to each of said plurality of upstream buffers and configured to receive said plurality of packets, and to route each of said plurality of packets to a given one of said upstream buffers, depending upon the associated identifier;

a plurality of upstream reorder logic circuits, wherein each one of said plurality of upstream reorder logic circuits is coupled to a corresponding one of said plurality of upstream buffers and is configured to determine an order of transmitting each of said packets stored in said corresponding one of said plurality of upstream buffers based on a set of predetermined criteria;

a transmitter unit coupled to said plurality of upstream reorder logic circuits and configured to transmit **one of said plurality of upstream packets stored within said plurality of upstream buffers** dependent upon an order of receipt within plurality of upstream buffers."

Ruszczyk is directed toward a method of scheduling higher and lower priority data packets, wherein at col. 3, lines 50-64 Ruszczyk discloses

> "The method includes a first network device monitoring a first queue with multiple data packets of varying priorities and determining scheduling priorities or transmission deadlines for data packets in the first queue. The multiple data packets provide various class-of-service and quality-of-service connections. After a first network device determines the priority of the data packets, the first network device inserts higher priority data packets into a second queue and lower priority data packets into a third queue. The data packets in the second queue are scheduled for transmission using a first scheduling method as higher priority data packets. The data packets in the third queue are scheduled by a second scheduling method with transmission deadlines as lower priority data packets to be executed after the higher priority data packets." (Emphasis added)

The Examiner acknowledges "Ruszczyk **does not teach** that the packets are routed to a given one of the upstream buffers based on the associated identifier that is indicative of the source of the packet."

However, the Examiner asserts "Lu teaches a system in which priorities are assigned to communication signals based on the source of the signal, and therefore the priority is indicative of the source." The Examiner further asserts "one of ordinary skill in the art at the time of the invention was made would combine the device of Ruszczyk with the system of Lu, resulting in the inventions of claims 1-3, 7, 8, 17-19, and 23-24 in order to allow each source fair and efficient access to the router by assigning separate priorities, based on the bandwidth requirement of the source, to each source connected to the router."

Lu discloses at col. 20 lines 34-44

> "The buffer queue manager 910 may **manage** communication signal data corresponding to the received communication signals according to any number of buffer management schemes such as based on a priority of the communication signals. The priority scheme may assign priorities to the received communication signals based on various factors including the source of the communication signals, processing load, and the like. Once communication signal data is determined to be next in the queue by the

buffer queue manager 910, the controller 904 performs processing..." (Emphasis added)

Huang is directed to a fair data bus arbitration system which assigns adjustable priority values to competing sources, wherein Huang teaches at col. 2, lines 27-32

> "The **arbitration protocol** of the present invention controls access to a shared data bus in a manner which ensures that the bus is utilized efficiently and that each competing source has a fair opportunity to access the bus. This is achieved by assigning each competing source an adjustable priority weighting value (PWV) which is initially set to a value which reflects the bandwidth requirements of the competing source (CS_i). During arbitration, the competing source with the lowest PWV is granted access to the bus." (Emphasis added)

From the foregoing, it appears that Ruszczyk teaches placing the incoming packets into different queues based upon their respective priorities. It also appears that Lu teaches assigning priorities to communication signals based upon a signal source. It further appears that Huang teaches assigning competing source a weighted priority for arbitration purposes.

Notwithstanding, in contrast to the Examiner's assertion of the motivation to combine the above references, the Applicant disagrees that there is a motivation in any of the references, taken either singly or in combination, to combine these references. Specifically, the Applicant's invention is not trying to solve fair access to a given bus or resource based upon certain sources having higher priorities than other sources. To the contrary, in the Applicant's invention, the separation of the packets based on their source (e.g., I/O stream) may reduce the logic required to reorder transactions by considering I/O streams independently and therefore only reordering transactions within an I/O stream and not across more than one I/O stream.

However, the Applicant notes that Ruszczyk further discloses at col. 6, lines 15-19 "Once a transmission deadline of a lower priority data packet in low priority queue 66 has expired, **a promoter 70 promotes the lower priority data packet to high priority queue 62** whereby the promoted data packet is scheduled by guaranteed scheduling method 64." (Emphasis added)

Thus, Ruszczyk teaches as long as there are packets in the high priority queue, the high priority packets will be transmitted and if a packet in the low priority queue has a deadline that passes, it will be promoted (i.e., moved) to the high priority queue.

Accordingly, the Applicant asserts that even if, *arguendo*, one were to combine Ruszczyk with Lu or Huang, one would not obtain the invention as recited in the Applicant's claim 1. Specifically, since in the teachings of Ruszczyk, the sorted packets may be moved from one queue to another, the Applicant's invention would be rendered ineffective or inoperable. Thus, the Applicant respectfully submits that the references are not properly combinable.

Cidon is directed to fault location and performance testing of communication networks. The Applicant finds no reference, in Cidon, to "wherein each of said plurality of upstream packets contains an associated identifier **indicative of a source of each of said plurality of upstream packets**" or "wherein said router is configured to route each of said plurality of packets to a given one of said upstream buffers, **depending upon the associated identifier**" as recited in the Applicant's claim 1.

Drottar is directed to a method and apparatus for failure and recovery in a computer network. The Applicant finds no reference, in Drottar, to "wherein each of said plurality of upstream packets contains an associated identifier **indicative of a source of each of said plurality of upstream packets**" or "wherein said router is configured to route each of said plurality of packets to a given one of said upstream buffers, **depending upon the associated identifier**" as recited in the Applicant's claim 1.

Neither Ruszczyk, Lu nor Huang, taken singly or in combination, teach or suggest the combination of features recited in the applicant's claim 1. Accordingly, the Applicant submits that claim 1, along with its dependent claims, patentably distinguishes over Ruszczyk in view of Lu and Huang, over Ruszczyk and Lu and in view of Cidon, and

over Ruszczyk and Lu in view of Cidon and in further view of Drottar for the reasons given above.

Likewise, claims 9 and 17 recite features similar to claim 1. Thus, claims 9 and 17, along with their respective dependent claims, are believed to patentably distinguish over Ruszczyk in view of Lu and Huang, over Ruszczyk and Lu and in view of Cidon, and over Ruszczyk and Lu in view of Cidon and in further view of Drottar for at least the reasons given above.

CONCLUSION

Applicant submits the application is in condition for allowance, and an early notice to that effect is requested.

If any fees are due, the Commissioner is authorized to charge said fees to Meyertons, Hood, Kivlin, Kowert, & Goetzel, P.C. Deposit Account No. 501505/5500-66800/BNK.

Respectfully submitted,

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